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DEPARTMENT OF DEFENSE ACQUISITION POLICY

Successful acquisition programs are fundamentally dependent upon competent people, rational priorities, and clearly defined responsibilities.
DoDD 5000.1

3.1 REQUIREMENTS

3.1.1 Authority and Methodology

Department of Defense Directive 5000.1, of 15 March 1996, Subject: Defense Acquisition, in accordance with Office of Management and Budget (OMB) Circular A-109, establishes a disciplined, yet flexible, management approach for acquiring quality products that satisfy the operational user's requirements. Such an approach must effectively translate operational needs into stable, affordable acquisition programs. The policies stated in DoDD 5000.1 apply to all elements in DoD and are intended to forge a close and effective interface among the Department's three principal decision support systems, which are the:

- Requirements Generation System,
- Acquisition Management System, and the
- Planning, Programming, and Budgeting System.

Within the Acquisition Management System, all the tasks and activities needed to bring a program to the next major milestone occur during an acquisition phase. Phases provide a logical means of progressively translating broadly stated mission needs into well-defined, system-specific requirements and ultimately into operationally effective, suitable, and survivable systems. These systems are also intended to provide the operational user with measurable improvements to mission accomplishment in a timely manner and at a fair and reasonable price. As previously noted, the applicable policies and principles that govern the operation of the defense acquisition system and guide all defense acquisition programs are stated in DoDD 5000.1 and are divided into the three major policy areas that follow:

- Translating Operational Needs into Stable, Affordable Programs;
- Acquiring Quality Products; and
- Organizing for Efficiency and Effectiveness.

3.1.2 Major Themes

- Teamwork. The employment of Integrated Product Teams (IPTs), in an environment encouraging Integrated Product and Process Development (IPPD), is strongly emphasized in DoD 5000.2-R. Chapter 4 of this Guide is devoted to this topic.

- Tailoring. As in the past, all programs must accomplish certain core activities. However, acquisition personnel are now encouraged to tailor the acquisition process and streamline the reporting and documentation process in accord with common sense and sound business management practice. The few reports and report formats dictated by the new DoD 5000.2-R are those described in Appendices I-IV of that regulation.

- Empowerment. DoDD 5000.1 and DoD 5000.2-R reflect current efforts to empower program management personnel and their vendors to do the best they can. Those documents canceled many directives that previously dictated rigid actions and reporting requirements. Program Managers (PMs) do not have to ask permission to take actions that are otherwise permitted by law and are within the scope of their charters.

- Cost As an Independent Variable (CAIV). Henceforth, acquisition managers and their respective weapons system user representatives must consider both performance requirements and fiscal constraints. Responsible cost objectives must be set for each program phase. Chapter 14 is devoted to this topic.

- Commercial Products. The new directives mandate that DoD fully implements the statutory preference for the acquisition of commercial items by federal agencies. Acquisition of commercial items, components, processes, and practices provides rapid and affordable application of fast-paced commercial technologies to validated DoD mission needs.

- Best Practices. Acquisitions of the future must take into account customary commercial practices in developing acquisition strategies and contracting arrangements.

3.1.3 Key Officials and Forums

Program definition is the process of translating broadly stated mission needs into a set of operational requirements from which specific performance specifications are derived. In the area of requirements, a key official is the Vice-Chairman of the Joint Chiefs of Staff (VCJCS). The key forum is the Joint Requirements Oversight Council (JROC), chaired by the VCJCS. The JROC, in the case of Acquisition Category (ACAT) I programs, is responsible for conducting requirements analyses, validating mission needs and key performance parameters, and developing recommended joint priorities for those needs. As

of 1 January 1997, law under Title 10 establishes the existence of the JROC and its functions. It should also be noted that the Office of the Secretary of Defense (OSD) Principal Staff Assistants (PSAs) represent the user community in the functional area under their direction on acquisition and requirements matters for Automated Information Systems (AISs). Within the Acquisition Management System, there is a clear linkage between the analysis of alternatives, system requirements, and system evaluation measures of effectiveness.

After the JROC validates the mission need for an ACAT I program, the Under Secretary of Defense for Acquisition and Technology (USD(A&T)) shall:

- convene a Milestone 0 Defense Acquisition Board (DAB) to review the Mission Need Statement (MNS);
- identify possible materiel alternatives; and
- authorize concept studies, if they are deemed necessary.

For ACAT IA programs, the JROC, or the cognizant OSD PSA, validates the mission need and process integrity in compliance with DoDD 8000.15; and the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD(C^3I)) convenes a Milestone 0 Major Automated Information System Review Council (MAISRC). A favorable Milestone 0 decision does not yet mean that a new acquisition program has been initiated. Further, when acquisition programs are initiated in response to a military threat, they are based on authoritative, current, and projected threat information.

3.1.4 Mission Need Statement (MNS)

DoD Components document deficiencies in current capabilities and opportunities to provide new capabilities in the MNS expressed in broad operational terms. The MNS shall:

- identify and describe the mission deficiency and discuss the results of mission area analysis;
- describe why non-materiel changes (i.e., doctrine, tactics, etc.) are not adequate to correct the deficiency;
- identify potential materiel alternatives; and
- describe any key boundary conditions and operational environments, such as information warfare, that may impact satisfying the need.

The MNS is prepared in accordance with Commander, Joint Chiefs of Staff (CJCS) Memorandum of Policy (MOP) 77. System performance objectives and thresholds are

developed from, and remain consistent with, the initial broad statements of operational capability. The requirements are refined at successive milestone decision points as a consequence of cost-schedule-performance tradeoffs during each phase of the acquisition process.

In summary, all acquisition programs are based on identified, documented, and validated mission needs, which result from ongoing assessments of current and projected capability. Thus, mission needs may be designed to establish a new operational capability, to improve an existing capability, or to exploit an opportunity to reduce costs or enhance performance.

3.1.4.1 Cost Objectives. Upon approval of an MNS, an approach is formulated to set and refine cost objectives. By program initiation (usually Milestone I), each ACAT I and ACAT IA PM establishes life-cycle cost objectives for the program through consideration of projected out-year resources, recent unit costs, parametric estimates, mission effectiveness analysis and trades, and technology trends.

3.1.5 Evaluation of Requirements Based on Commercial Market Potential

Researching the potential of the commercial marketplace to meet system performance requirements is an essential element of building a sound set of requirements. In developing system performance requirements, DoD Components evaluate how the desired performance requirements could reasonably be modified to facilitate the use of potential commercial items, components, specifications, standards, processes, technology, and sources. The results of the evaluation are included as part of the initial Operational Requirements Document.

3.1.6 Operation Requirements Document (ORD)

At each milestone, beginning with program initiation (usually Milestone I), thresholds and objectives are documented by the user or user's representative in an ORD. These thresholds and objectives are initially expressed as measures of effectiveness or performance and minimum acceptable requirements for the proposed concept or system. Thresholds and objectives in the ORD are designed to consider the results of the analysis of alternatives and the impact of affordability constraints. Key Performance Parameters (KPPs), validated by the JROC, are included in the appropriate Acquisition Program Baseline (APB). A KPP is a system capability or characteristic so significant that failure to meet the threshold can be cause for the concept or system selection to be reevaluated or for the program to be reassessed or terminated. KPPs are extracted from the ORD and included in the APB. Thus, user or user representative participation in each acquisition phase is essential.

Thresholds and objectives are defined below. The values for an objective or threshold and definitions for any specific parameter contained in the ORD, Test and Evaluation Master Plan (TEMP), and APB shall be consistent.

Threshold. The threshold value is the minimum acceptable value that, in the user's judgment, is necessary to satisfy the need. If threshold values are not achieved, program performance is seriously degraded, the program may be too costly, or the program may no longer be timely. The spread between objective and threshold values is individually set for each program and is based on the characteristics of the program (e.g., maturity, risk, etc.).

Objective. The objective value is the value desired by the user and the value the PM is attempting to obtain. The objective value could represent an operationally meaningful, time-critical, and cost-effective increment above the threshold for each program parameter. Program objectives (parameters and values) may be refined based on the results of the preceding program phase(s).

3.1.6.1 Performance, Engineering, or Design Changes. The Cost Performance Integrated Product Team (CPIPT) (normally led by the PM or the PM's representative) is empowered to recommend to the PM performance or engineering and design changes as long as the threshold values in the ORD and APB can be achieved. If the changes require ORD/APB threshold value changes, the leader of the CPIPT notifies the PM and the Overarching Integrated Product Team (OIPT) leader. The PM ensures that the changes are brought before the ORD and/or APB approval authorities for decision. The CPIPT has responsibility for integrating and evaluating all cost-performance tradeoffs analyses conducted.

3.1.6.2 Operational Requirement Document (ORD) and Testing. Test and evaluation strategy shall reference the ORD as follows:

- Test planning, at a minimum, addresses all system components (hardware, software, and human interfaces) that are critical to the achievement and demonstration of contract technical performance specifications and operational effectiveness and suitability requirements from the ORD.

- Quantitative criteria are phrased so they provide substantive evidence for analysis of hardware, software, and system maturity and readiness to proceed through the acquisition process. Linkage shall exist among the various Memoranda of Effectiveness (MOEs); Memoranda of Performance (MOPs), which are used in the analysis of alternatives or the ORD; and test and evaluation. In particular, the MOEs, MOPs, the ORD criteria, the analysis of alternatives, the TEMP, and the APB shall be consistent.

- Operational test and evaluation (OT&E) programs shall be structured to determine the operational effectiveness and suitability of a system under realistic conditions (e.g., combat) and to determine if the minimally acceptable, ORD-specified operational performance requirements have been satisfied.

3.1.7 Acquisition Strategy and Life-Cycle Support

Each PM develops and documents an acquisition strategy that serves as the roadmap for program execution from program initiation through postproduction support. In developing an acquisition strategy, a primary goal is to minimize the time and cost of satisfying an identified, validated need that is consistent with common sense and sound business practices. The acquisition strategy evolves through an iterative process and becomes increasingly more definitive in describing the relationship of the essential elements of a program. Essential elements in this context include, but are not limited to, sources, risk management, cost as an independent variable, contract approach, management approach, environmental considerations, and source of support. The PM addresses other major initiatives that are critical to the success of the program.

The acquisition strategy includes the critical events that govern the management of the program. The event-driven acquisition strategy explicitly links program decisions to demonstrated accomplishments in development, testing, initial production, and life-cycle support. The events set forth in contracts shall support the appropriate exit criteria for the phase or preceding development events that are established for the acquisition strategy.

The acquisition strategy is tailored to meet the specific needs of individual programs, including consideration of incremental (block) development and fielding strategies. The benefits and risks associated with reducing lead time through concurrency are specifically addressed in tailoring the acquisition strategy. In tailoring an acquisition strategy, the PM addresses the management requirements imposed on the contractor(s).

The PM initially develops the acquisition strategy at program initiation (usually Milestone I) and keeps the strategy current by updating it whenever there is a change to the approved acquisition strategy or as the system approach and program elements are better defined. The PM develops the acquisition strategy in coordination with the Working-level Integrated Product Team. The Program Executive Officer (PEO) and Component Acquisition Executive (CAE), as appropriate, concur in the acquisition strategy. The Milestone Decision Authority (MDA) approves the acquisition strategy prior to release of the formal solicitation. This approval usually precedes the milestone review, except at program initiation when the strategy usually is approved as part of the initial milestone decision review.

Paragraphs 3.3.1 through 3.3.8 of DoD 5000.2-R address acquisition-strategy related topics including:

- sources of supplies and/or services;
- risk management;
- Cost As an Independent Variable;

- contract approach;
- management approach;
- environmental, safety, and health considerations;
- sources of support; and
- warranties.

3.1.7.1 Non-Traditional Acquisition. The Department must be prepared to plan and execute a diverse variety of missions. To meet the user's needs in a timely manner, the acquisition system must be able to rapidly insert advanced technology directly into the warfighter's arsenal. To accomplish this goal, the acquisition system must demonstrate new and improved military capabilities on a scale adequate to establish operational utility and affordable cost. Demonstrations based on mature technologies may lead to more rapid fielding. Where appropriate, managers in the acquisition community make use of non-traditional acquisition techniques, such as Advanced Concept Technology Demonstrations (ACTDs), rapid prototyping, evolutionary and incremental acquisition, and flexible technology insertion.

3.1.7.2 Performance Specification. In solicitations and contracts, standard management approaches or manufacturing processes are not required. Performance specifications are used when purchasing new systems, major modifications, and commercial and nondevelopmental items. Performance specifications include DoD performance specifications, commercial item descriptions, and performance-based non-government standards. If it is not practicable to use a performance specification, a non-government standard is used. There may be cases when military specifications are needed to define an exact design solution because there is no acceptable non-government standard or because the use of a performance specification or non-government standard is neither cost-effective, practical, nor does it meet the user's needs. As a last resort in these cases, military specifications and standards use is authorized with an appropriate waiver or exception from the MDA.

3.2 LIFE-CYCLE MANAGEMENT

3.2.1 Event-Oriented Management

The Department uses a rigorous, event-oriented management process that emphasizes:

- effective acquisition planning;
- improved and continuous communications with users; and
- prudent risk management by both the government and industry.

Event-oriented means that the management process is based on significant events in the acquisition life cycle and not on arbitrary calendar dates.

3.2.2 Stability

Once DoD initiates an acquisition program to meet an operational need, managers at all levels make program stability a top priority. To maximize stability, the Components develop realistic long-range investment plans and affordability assessments. The Department's leadership strives to ensure stable program funding throughout the program's life cycle.

3.2.3 Program Objectives and Thresholds

Beginning at the inception of a new acquisition program, the PM, together with the user, proposes for MDA approval objectives and thresholds for cost, schedule, and performance that will result in systems that are affordable, timely, operationally effective, operationally suitable, and survivable. As the program matures, the PM refines these objectives and thresholds so they are consistent with operational requirements.

3.2.4 Risk Assessment and Management

PMs and other acquisition managers continually assess program risks. Risks must be well understood, and risk management approaches must be developed before decision authorities can authorize a program to proceed into the next phase of the acquisition process. To assess and manage risk, PMs and other acquisition managers use a variety of techniques, including technology demonstrations, prototyping, and test and evaluation. Risk management encompasses identification, mitigation, continuous tracking, and control procedures that feed back through the program assessment process to decision authorities. To ensure an equitable and sensible allocation of risk between government and industry, PMs and other acquisition managers develop a contracting approach appropriate to the type of system being acquired.

3.2.5 Best Practices

The PM streamlines all acquisitions so that the acquisitions contain only those requirements that are essential and cost-effective. Contract requirements are stated in terms of performance rather than design-specific procedures. Management data requirements are limited to those essential for effective control. Acquisition process requirements are tailored to meet the specific needs of individual programs. Relief or exemption is sought for those requirements that are not essential, cost-effective, or do not add value. Early industry involvement in the acquisition effort, consistent with the Federal Advisory Committee Act (FACA27), is encouraged to take advantage of industry expertise to improve the acquisition strategy. The PM avoids imposing government-unique requirements that significantly increase industry compliance costs.

3.2.6 Life-Cycle Cost Estimates

Life-cycle cost estimates are explicitly based on the program objectives, operational requirements, and contract specifications for the system. For ACAT I programs, life-cycle cost estimates are based on a program DoD Work Breakdown Structure (WBS); and, for ACAT IA programs, life-cycle cost estimates are based on a life-cycle cost-and-benefit element structure agreed upon by the IPT. Estimates are comprehensive in character. They identify all elements of cost that would be entailed by a decision to proceed with development, production, and operation of the system regardless of funding source or management control. For ACAT I programs, estimates are consistent with the cost estimates used in the analysis of alternatives. The operation and support costs are consistent with the manpower estimate. Cost estimates should be neither optimistic nor pessimistic; they should be based on a careful assessment of risks and should reflect a realistic appraisal of the level of cost most likely to be realized.

3.2.6.1 Cost/Performance Tradeoffs. Upon approval of a MNS, an approach is formulated to set and refine cost objectives. By program initiation (usually Milestone I), each ACAT I and ACAT IA PM shall have established life-cycle cost objectives for the program through consideration of projected out-year resources, recent unit costs, parametric estimates, mission effectiveness analysis and trades, and technology trends. A complete set of life-cycle cost objectives includes RDT&E, production, operating and support, and disposal costs. At each subsequent milestone review, cost objectives and progress towards achieving them will be reassessed.

Maximizing the PM's and contractor's flexibility to make cost/performance tradeoffs without unnecessary higher-level permission is essential to achieving cost objectives. Therefore, the number of threshold items in requirements documents and acquisition program baselines are strictly limited. The threshold values represent true minimums; and requirements are stated in terms of capabilities rather than technical solutions and specifications.

RFPs include a strict minimum number of critical performance criteria that will allow industry maximum flexibility to meet overall program objectives. Cost objectives are used as a management tool. The source selection criteria communicated to industry should reflect the importance of developing a system that can achieve stated production and life-cycle cost thresholds.

3.3 DOCUMENTATION

Limited Reporting Requirements. (See Appendices I-IV, DoD 5000.2-R.) Complete and up-to-date program information is an essential ingredient of the defense acquisition process. At the same time, it is important to keep reporting requirements to a minimum. Consistent with statutory requirements, PMs and other participants in the defense acquisition process are required to present only the minimum information necessary for decision authorities to understand program status and make informed decisions. (Again, refer

to Appendices I-IV, DoD 5000.2-R, for the mandatory reports and formats for ACAT I and IA programs.) The exchange of program information is facilitated by the use of IPTs.

3.3.1 Tailoring

DoD 5000.2-R presents a general model for managing Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) acquisition programs. The broad coverage of the general model acknowledges that every acquisition program is different. Any singular MDAP or MAIS does not need to follow the entire process described in the regulation. However, cognizant of this model, the PM and the MDA muststructure the MDAP or MAIS to ensure a logical progression through a series of phases designed to:

- reduce risk,
- ensure affordability, and
- provide adequate information for decision-making that will provide the needed capability to the warfighter in the shortest practical time.

PMs and MDAs, for other than MDAPs or MAISs, generally adhere to the process described in Part 1 of DoD 5000.2-R; however, they tailor the process, as appropriate, to best match the conditions of individual non-major programs.

Certain core issues must be addressed at the appropriate milestone for every acquisition program. These issues are described in detail in the major sections of DoD 5000.2-R and include program structure, design, assessments, and periodic reporting. How these issues are addressed is tailored by the appropriate MDA to minimize the time it takes to satisfy an identified need consistent with common sense, sound business management practice, applicable laws and regulations, and the time sensitive nature of the requirement itself. Tailoring may be applied to various aspects of the acquisition process, including program documentation, acquisition phases, the timing and scope of decision reviews, and decision levels. MDAs promote flexible, tailored approaches to oversight and review, which arebased on mutual trust and a program's size, risk, and complexity.

3.4 LOGISTICS REQUIREMENTS

3.4.1 Total System Approach

Acquisition programs are managed to optimize total system performance and minimize the cost of ownership. The total system includes:

- the prime mission equipment;

- the people who operate and maintain the system;
- how the system's security procedures and practices are implemented;
- how the system operates in its intended operational environment;
- how the system will be able to respond to any effects unique to that environment (such as Nuclear, Biological and Chemical (NBC) or information warfare);
- how the system will be deployed to this environment;
- the system's compatibility, interoperability, and integration with other systems;
- the operational and support infrastructure (including command, control, communications, computers and intelligence}
- all related training and training devices;
- data elements required by the system in order for it to operate; and
- the system's potential impact on the environment and the means for environmental compliance.

3.4.2 Supportability

Supportability factors are integral elements of program performance specifications. However, support requirements are not to be stated as distinct logistics elements; instead, they are stated as performance requirements that relate to a system's operational effectiveness, operational suitability, and life-cycle cost reduction. Accordingly, the PM ensures that a systems engineering process is used to translate operational needs and/or requirements into a system solution that includes the design, manufacturing, test and evaluation, support processes, and products. This will include transforming operational needs and requirements into an integrated system design solution through concurrent consideration of all life-cycle needs (i.e., development, manufacturing, test and evaluation, verification, deployment, operations, support, training, and disposal).

3.4.3 Acquisition Logistics

The PM conducts acquisition logistics management activities throughout the system development to ensure the design and acquisition of cost-effective, supportable systems and to ensure that these systems are provided to the user with the necessary support infrastructure for achieving the user's peacetime and wartime readiness requirements.

3.4.3.1 Supportability Analyses. Supportability analyses are conducted as an integral part of the systems engineering process, beginning at program initiation and continuing throughout system development. Supportability analyses form the basis for related design

requirements included in the system specification and for subsequent decisions concerning how to support the system in the most cost-effective manner over its entire life cycle. Programs allow contractors the maximum flexibility in proposing the most appropriate supportability analyses.

3.4.3.2 Support Concepts. Acquisition programs establish logistics support concepts (e.g., two levels, three levels) early in the program and refine them throughout the development process. Life-cycle costs play a key role in the overall selection process. Support concepts for new and future systems provide for cost effective, total life-cycle logistics support.

3.4.3.3 Support Data. Data requirements shall be consistent with the planned support concept and represent the minimum essential to effectively support the fielded system. Government requirements for contractor-developed support data are coordinated with the data requirements of other program functional specialties to minimize data redundancies and inconsistencies.

3.4.3.4 Support Resources. Support resources, such as operator and maintenance manuals, tools, support equipment, training devices, etc., for major system components, are not procured before the system/component hardware and software design stabilizes. The PM considers the use of embedded training and maintenance techniques to enhance user capability and reduce life-cycle costs. Where they are available, cost-effective, and can readily meet the user's requirements, commercial support resources are used.

DoD Automatic Test System (ATS) families or COTS components that meet defined ATS capabilities are used to meet all acquisition needs for automatic test equipment hardware and software. ATS capabilities are defined through critical hardware and software elements. The introduction of unique types of ATS into the DoD field, depot, and manufacturing operations are minimized.

3.5 CORE MAINTENANCE

It is DoD policy to retain limited organic core depot-maintenance capability to meet essential wartime surge demands, promote competition, and sustain institutional expertise. Support concepts, for new and modified systems, maximize the use of contractor-provided, long-term, total life-cycle logistics support that combines depot-level maintenance along with wholesale and selected retail materiel management functions. Life-cycle costs and use of existing capabilities, particularly while the system is in production, plays a key role in the overall selection process. Other than stated above and with an appropriate waiver, DoD organizations may be used as substitutes for contractor-provided logistics support, such as when contractors are unwilling to perform support or where there is a clear, well-documented cost advantage. The PM provides for long-term access to data required for competitive sourcing of systems support. The waiver to use DoD organizations must be approved by the MDA. It should be noted that recent studies (1996/97) by the Defense Science Board have concluded that, in order to free-up funds for system

modernization, the organic **core** maintenance capability retained by the DoD should be even less than that implied above.

3.6 DEVELOP A SEAMLESS LOGISTICS SYSTEM

3.6.1 Fielding Standard, Modernized Logistics Business Systems and Improving Communications of Logistics Systems

Clearly, seamless, standard, modern logistics business systems can bring many benefits to the DoD in the areas of financial accounting, management, and industrial/production operations. Thus, developing such systems is clearly a DoD goal in the context of acquisition reform. However, the launching of a new business system is a difficult technical and financial task. The costs of alternative methods of developing business systems and their operation and maintenance can, in some cases, offer little or no net economic gain or a competitive return on investment. Even the most optimum alternative for bringing a modern system into full operation may require an extended period before benefits exceed costs. In the meantime, the new system is likely to become outdated. Further, alternative solutions, which require extended payback periods, tend to rely on too many assumptions because the needed facts to support management decisions are not available. Finally, the affordability factor or financial priority for such systems, in the context of other DoD funding needs, may not be sufficient to get a new business system started, much less to get it started on an optimum course. If the system has a direct link to operational readiness, as many do, the system's affordability may be enhanced.

This being the environment impacting the initiation and maintenance of much needed new business systems, a summary of the management challenges facing a recent effort to modernize a logistics/financial system with clear readiness impact is briefly presented below. The hope is that this summary will alert the reader to the depth and breadth of representative issues encountered in the initiation or modernization of a DoD logistics business system.

The previous Defense Working Capital Fund (DWCF) (known earlier as the Defense Business Operating Fund) Corporate Board desired to increase the capability of the accounting systems that were used in the Depot Maintenance Business Area (DMBA) of the DWCF. Also, they desired to decrease the number of accounting systems in the DMBA, to increase standardization, and decrease costs.

The DWCF Corporate Board required an analytical basis to aid them in deciding whether it was preferable to:

- reduce the number of accounting systems by moving to a separate, single system for each of the three Military Departments (Option One); or

- move to a single system for all DoD DMBA activities (Option Two).

These two options resulted from an apparent conflict. The logistics community was pursuing a single depot-maintenance information system that incorporated both production and accounting capabilities while the Defense Finance and Accounting Service (DFAS) was recommending three depot-maintenance accounting systems — one for each Military Department as opposed to the several each Service now has. Therefore, the Under Secretary of Defense (Comptroller) or USD(C) was concerned that significant investments could be made in the accounting systems for each Military Department; and, shortly thereafter, a single system associated with the single production system would replace them. The USD(C) then directed that an economic analysis be performed so that the DWCF Corporate Board would have the cost information needed to make an informed decision on the preferable option.

The DFAS had already identified the candidate systems for Option One as the:

- Standard Industrial Fund Accounting System (SIFS) for the Army;
- Naval Air Systems Command Industrial Fund Management System (NIFMS) for the Navy; and the
- financial modules of the Depot Maintenance Management Information System (DMMIS) financial system for the Air Force.

Candidates for the single DoD system in Option Two were limited to those same systems.

The economic analysis concluded that Option One (a separate accounting system for each Military Department from those systems currently available) was preferable to Option Two (a single, new accounting system for all DoD depots). For the reasons stated below, the single set of production systems has not come about and is not currently planned. Instead, each Service will continue with a unique set of updated production systems that feed into the financial systems. Therefore, Option One was chosen because multiple interfaces would have to be developed for any accounting system chosen as the single, standard system (Option Two). That interface problem, combined with the unique business practices followed by each Service and the additional deployments Option Two would require, increased the investment costs of Option Two relative to Option One. Increased investment costs in the face of decreased operating and support-cost savings made a single, shared accounting system a poor choice at the time. If the depot production systems and business practices evolve toward a single system in the future, then the option of a single accounting system becomes more attractive.

While Option One was preferable, it was not uncostly. Estimating the cost of this option was essential to making decisions on the extent of system consolidation and timing. The economic analysis provided estimates of the cost of upgrading the three systems to meet the functional requirements specified by DFAS and of deploying them to all maintenance depots in their respective Military Departments.

The analysis of SIFS showed that, for a one-time investment cost of $4.9 million, SIFS could be upgraded and deployed to the three Army arsenals. Operating and support costs would remain unchanged. SIFS would improve the functionality of the existing arsenal systems and standardize DWCF accounting within the Army.

The analysis of NIFMS was more complex. Because NIFMS was being deployed first to the Navy R&D community, some costs were paid during that deployment and were not paid again by the DBMA community. The total one-time investment cost of upgrading NIFMS and deploying it to all Marine Corps and Navy maintenance depots ranged from $23.2 million (at the 50 percent confidence level) to $27.8 million (at the 90 percent confidence level). Because some of this cost was shared with the R&D community, the incremental investment cost was $17.4 million to $19.9 million. As a result of deploying NIFMS, the operating and support costs increased for Marine Corps logistics bases, naval ordnance centers, and naval shipyards.

The investment costs of deploying NIFMS to naval shipyards were substantial ($11.7 million to $13.9 million). This raised the question of whether it was less costly to upgrade the existing financial management system at the shipyards rather than replace it with NIFMS. Another option was for NIFMS to use an open systems environment configuration; this configuration would result in significantly lower subsequent investment and operating-and-support costs.

The analysis of DMMIS raised some very serious questions. The largest cost for DMMIS may have been to make it work as advertised rather than to upgrade its functionality. DMMIS does not now accurately report costs of depot maintenance. Further, the DMMIS financial subsystems, alone, did not provide coverage for all of an Air Logistics Center's (ALC's) workload. The costs of these and other needed repairs were uncertain. Deployment costs to date at the Warner-Robins ALC had been substantial, yet the system is not yet running properly. Nonetheless, the economic analysis estimated $5 million to $15 million for upgrading DMMIS to DFAS standards; about $3 million for deploying DMMIS to Warner-Robins ALC and Oklahoma City ALC; and $2 to $3 million for developing and deploying supplemental systems to cover all ALC workload. This did not include the cost of fixing the DMMIS financial subsystems so that they worked properly or the cost of fixing and validating retained systems.

In summary, the costs of business systems can range from those that are easily estimated to those that have an estimate with a low level of confidence and a poor cost/benefit ratio or return on investment. Affordability or relative funding priority will always be an issue. These problems are often tied to technical uncertainty and poorly understood risks. However, as with all engineering matters, the application of solid systems engineering skills, appropriate testing, and other tailored DoD acquisition policies and best commercial practices can create an environment in which well-justified programs can succeed.